

Amendments to the Claims

This Listing of Claims replaces all prior versions, and listings, of claims in the present application.

Listing of Claims:

1. (currently amended) An exhaust manifold comprising a slip cast ceramic inner layer having an inner wall surface defining an exhaust gas passageway of said manifold, a ceramic insulation layer disposed exterior to and adjacent said inner layer, and an outer structural layer disposed exterior to said insulation layer, and a strain isolation layer disposed between said insulation layer and said outer structural layer, said strain isolation layer comprising an intumescent mat that expands on heating and is effective to dampen unmatched thermal expansion between said outer structural layer and said insulation layer wherein said ceramic inner layer is a slip cast layer.

2. (original) An exhaust manifold according to claim 1, said ceramic insulation layer comprising ceramic fibers and ceramic filler material.

3. (original) An exhaust manifold according to claim 1, said ceramic inner layer comprising fused silica.

4. (original) An exhaust manifold according to claim 1, said ceramic inner layer being slip cast from a slip composition comprising at least 60 weight percent colloidal fused silica particles.

5. (original) An exhaust manifold according to claim 1, said ceramic inner layer comprising a major amount of fused silica.

6. (original) An exhaust manifold according to claim 1, said ceramic inner layer being slip cast from a slip composition comprising fused silica and no more than 5 weight percent fibers.

7. (original) An exhaust manifold according to claim 1, said ceramic inner layer being made from a ceramic material having a highly amorphous structure, able to withstand thermal cycling from 25°C up to 800°C and back down to 25°C without cracking.

8. (original) An exhaust manifold according to claim 1, wherein said inner layer is 0.05-5 mm thick.

9. (original) An exhaust manifold according to claim 1, wherein said outer structural layer is made from aluminum.

Claims 10-12: (canceled)

13. (currently amended) An exhaust manifold according to claim [[12]]1, said expandable material being vermiculate, perlite or a combination thereof

14. (currently amended) An exhaust manifold according to claim [[12]]1, said expandable material being in the form of embedded particles of vermiculite, perlite, or a combination thereof, dispersed throughout the intumescent mat.

15. (currently amended) An exhaust manifold according to claim [[11]]1, said intumescent mat comprising, by weight, 20-60 percent ceramic fibers, 35-75 percent expandable material, balance ceramic filler and/or binder material, wherein the expandable material is vermiculate, perlite or a combination thereof.

16. (currently amended) An exhaust manifold according to claim [[11]]1, said intumescent mat being ~~expandable on heating and contractible on cooling thereof after having been heat-expanded.~~

17. (original) An exhaust manifold according to claim 1, said manifold being water cooled.

Claims 18-19: (canceled)

20. (currently amended) An exhaust manifold according to claim [[18]]1, said inner wall surface having a surface grain roughness less than 100 μm .

21. (currently amended) An exhaust manifold according to claim [[18]]1, said inner wall surface having a surface grain roughness less than 10 μm .

Claims 22-26: (canceled)

27. (original) An exhaust manifold according to claim 1, further comprising a catalyst support body disposed within said exhaust gas passageway of said manifold, said catalyst support body having a catalyst material disposed on a surface thereof

28. (original) An exhaust manifold according to claim 27, said catalyst material being selected from the group consisting of: a) palladium-containing catalyst materials; b) platinum-containing catalyst materials; c) perovskite catalysts having the form ABO_x where A is a rare earth element or an alkaline earth element, and B is a transition metal element; and d) fluorite catalysts having the form ABO_x where A is a rare earth element and B is Ce or Zr.

29. (original) An exhaust manifold according to claim 1, said ceramic inner layer comprising a catalyst effective to convert at least a portion of CO and NO_x in an exhaust gas flowing through said exhaust gas passageway to CO_2 and N_2 and O_2 respectively.

Claims 30-31: (canceled)

32. (currently amended) An exhaust manifold comprising a ceramic inner layer defining an exhaust gas passageway of said manifold, a ceramic insulation layer disposed exterior to said ceramic inner layer, a strain isolation layer disposed exterior to said ceramic insulation layer, and an outer structural layer disposed exterior to said strain isolation layer, said strain isolation layer comprising an intumescent mat that expands on heating and is effective to dampen unmatched thermal expansion between said outer structural layer and said insulation layer, said ceramic inner layer being made from a material that is highly resistant to thermal shock from thermal cycling of said manifold between ambient temperature and 500°C.

33. (original) An exhaust manifold comprising a ceramic inner layer defining an exhaust gas passageway of said manifold, said ceramic inner layer comprising a catalyst effective to convert at least a portion of CO and NO_x in an exhaust gas flowing through said exhaust gas passageway to CO₂, and N₂ and O₂ respectively.

34. (original) An exhaust manifold according to claim 33, further comprising a ceramic insulation layer disposed exterior to and adjacent said inner layer, and an outer structural layer disposed exterior to said insulation layer.

Claims 35-37: (canceled)